

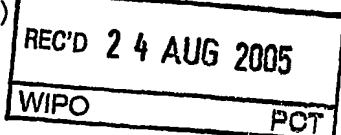
PATENT COOPERATION TREATY


PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference TY04003PCT		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/JP2004/006707		International filing date (day/month/year) 12.05.2004	Priority date (day/month/year) 14.05.2003	
International Patent Classification (IPC) or national classification and IPC B60K7/00, B60G3/06				
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA ET AL				
<p>1. This report is the International preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 06.12.2004		Date of completion of this report 25.08.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Schultze, Y Telephone No. +31 70 340-1092		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/JP2004/006707

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-18 as originally filed

Claims, Numbers

1-7 as amended (together with any statement) under Art. 19 PCT

Drawings, Sheets

1/8-8/8 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees, the applicant has:
 - ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
 - ☐ complied with.
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
 - ☐ all parts.
 - ☒ the parts relating to claims Nos. 1,2,5,6,7 .

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2,5-7
	No: Claims	1
Inventive step (IS)	Yes: Claims	5-7
	No: Claims	1-2
Industrial applicability (IA)	Yes: Claims	1-2,5-7
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item IV

Lack of unity of invention

The common features of claims 1, 3, 4 and 5:

- A suspension system for a vehicle, comprising: a motor for driving a wheel of the vehicle; a first suspension for supporting the wheel of the vehicle with respect to a vehicle body; a second suspension for elastically supporting the motor with respect to the vehicle body or the wheel; and a power transferring mechanism for transferring power from the motor to the wheel while permitting relative movement of the motor with respect to the wheel. are known from document D4.

The special technical features of claim 1, 3, 4 and 5 are neither same nor corresponding, so that the technical relationship between the subject-matter of claims 1, 3, 4 and 5 required by Rule 13.1 PCT is lacking, and the requirement for unity of invention referred to in Article 13 PCT is not fulfilled.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

- D1: WO 02/083446 A (NAGAYA GO ; BRIDGESTONE CORP (JP)) 24 October 2002 (2002-10-24)
- D2: US-A-5 848 663 (KURIKI NOBUHARU) 15 December 1998 (1998-12-15)
- D3: GB 156 398 A (PAUL ALPHONSE HUBERT MOSSAY; RANSOMES SIMS & JEFFERIES LTD; MOSSAY & C) 13 January 1921 (1921-01-13)
- D4: DE 37 25 620 A (KLAUE HERMANN) 23 February 1989 (1989-02-23)
- D5: US-A-5 679 087 (LUTZ DIETER) 21 October 1997 (1997-10-21)

2. Claims 1-2

2.1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

The document D4 discloses (the references in parentheses applying to this document):

A suspension system for a vehicle, comprising: a motor (13') that is disposed inboard with respect to a knuckle (11') for driving the wheel (5')(figure 2); a first suspension (7', 9') that is provided between the wheel (5') and a vehicle body (1) for elastically supporting the wheel (5') of the vehicle with respect to the vehicle body (1); a second suspension (29') that is provided between the motor (13') and a vehicle body (1) for elastically supporting the motor with respect to the vehicle body; and a power transferring mechanism (17', 19', 31', 33') that is provided between a rotating shaft of the motor and a wheel shaft of the wheel (5')(figure 2) for transferring power from the motor (13') to the wheel (5') while permitting relative movement of the motor with respect to the wheel (see figure 2).

2.2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 2 does not involve an inventive step in the sense of Article 33(3) PCT.

The subject-matter of claim 2 differs from the known suspension system in D4 in that:
- The second suspension includes a damper element.

The solution proposed in claim 2 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:
It is common practice to use elastic mounts combining a spring element and a damper element for supporting motors on vehicles.

3. Claims 5-7

3.1. The document D1 is regarded as being the closest prior art to the subject-matter of claim 5, and shows (the references in parentheses applying to this document):

A suspension system for a vehicle (figures 50, 53), comprising: a motor (3) for driving the wheel (2); a first suspension (6, 7) that is provided between the motor (3) and a vehicle body (100) for supporting the motor (3) with respect to the vehicle body (100) such that the motor (3) can move in up-and-down directions with respect to the vehicle body (100); a second suspension (36) that is provided between the wheel (2) and the motor (3) for

supporting the wheel (2) with respect to the motor (3) such that the wheel (2) can move in up-and-down directions with respect to the motor (3); and a power transferring mechanism (34) for transferring power from the motor (3) to the wheel (2) while permitting relative movement of the motor (3) with respect to the wheel (2).

The subject-matter of claim 5 differs from this known suspension system in that:

- the motor is disposed inboard with respect to a knuckle for driving the wheel
- the power transferring mechanism is provided between a rotating shaft of the motor and a wheel shaft of the wheel

The subject-matter of claim 5 is therefore new (Article 33(2) PCT).

3.2. The problem to be solved by the present invention may be regarded as disposing the motor such that the stroke of the up-and-down movements of the motor is not limited by the wheel or the knuckle. Furthermore motor and wheel shafts allow sufficient power to be transmitted from the motor to the wheel.

The solution to this problem proposed in claim 5 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

- The combination of the features of independent claim 5 is not rendered obvious by the available prior art.

3.3. Claims 6 and 7 are dependent on claim 5 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

CLAIMS

1. (amended) A suspension system for a vehicle, comprising:

5 a motor that is disposed inboard with respect to a knuckle for driving the wheel;

a first suspension that is provided between the wheel and a vehicle body for elastically supporting the wheel of the vehicle with respect to the vehicle body;

10 a second suspension that is provided between the motor and a vehicle body for elastically supporting the motor with respect to the vehicle body; and

a power transferring mechanism that is provided between a rotating shaft of the motor and a wheel shaft of the wheel for transferring power from the motor to the wheel while permitting relative movement of the motor with respect to the wheel.

2. The suspension system as claimed in claim 1, wherein the second suspension includes a spring element and a damper element.

3. (amended) A suspension system for a vehicle, comprising:

25 a motor for driving a wheel of the vehicle;

a first suspension for supporting the wheel of the vehicle with respect to a vehicle body;

a second suspension for elastically supporting the motor with respect to the vehicle body; and

30 a power transferring mechanism for transferring power from the motor to the wheel while permitting relative movement of the motor with respect to the wheel, wherein a damper element of the first suspension and a

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damper element of the second suspension are interconnected via a fluid passage such that the motor and the wheel move in opposite phases.

5 4. (amended) A suspension system for a vehicle, comprising:

 a motor for driving a wheel of the vehicle;

 a first suspension for supporting the wheel of the vehicle with respect to a vehicle body;

10 a second suspension for elastically supporting the motor with respect to the vehicle body; and

 a power transferring mechanism for transferring power from the motor to the wheel while permitting relative movement of the motor with respect to the wheel, 15 wherein damper elements of the second suspensions on the both sides of the vehicle are interconnected via a fluid passage.

 5. (amended) A suspension system for a vehicle, 20 comprising:

 a motor that is disposed inboard with respect to a knuckle for driving the wheel;

 a first suspension that is provided between the motor and a vehicle body for supporting the motor with 25 respect to the vehicle body such that the motor can move in up-and-down directions with respect to the vehicle body;

 a second suspension that is provided between the wheel and the motor for supporting the wheel with respect 30 to the motor such that the wheel can move in up-and-down directions with respect the motor; and

 a power transferring mechanism that is provided between a rotating shaft of the motor and a wheel shaft of

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the wheel for transferring power from the motor to the wheel while permitting relative movement of the motor with respect to the wheel.

5 6. The suspension system as claimed in claim 5, wherein the first suspension includes a spring element and a damper element and the second suspension includes another spring element and another damper element.

10 7. The suspension system as claimed in claim 5, wherein the first suspension includes a leaf spring.